UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,887	11/21/2001	Byron B. Han	18602-06514 (P2016USR1)	2185

61520 7590 08/06/2010

APPLE/FENWICK
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

EXAMINER	
MITCHELL, JASON D	
ART UNIT	PAPER NUMBER
2193	

NOTIFICATION DATE	DELIVERY MODE
08/06/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ptoc@fenwick.com

Office Action Summary	Application No.	Applicant(s)	
	09/990,887	HAN ET AL.	
	Examiner	Art Unit	
	Jason D. Mitchell	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,7 and 14-38* is/are rejected.

7)☐ Claim(s) *2-6 and 8-13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to a request for continued examination filed on 3/11/10.

Claims 1-38 are pending in this application.

Response to Arguments

Recapture Rejection

As discussed below the amendments to the claims do not fully overcome the recapture issues.

Rejection Under 35 USC 103(a)

On pp. 8-9, the applicant asserts Willman and Whiting do not teach creating a disk image of a source devise because Willman does not describe or suggest the use of disk images and Whiting Nothing in Whiting is related to the user of disk images. For example see the last par. on pg. 8 and the first par. on pg. 9:

> Willman does not describe the features of claim I. For example, Willman does not describe or suggest the use of disk images. A disk image is a file that is itself stored on a storage medium, and which appears to computer system resources as though it were itself a physical storage device such as a hard disk drive (see, e.g., USPN 5,991,542 at col. 3, lines 29-34. As noted, the system of claim 1 includes a controller that creates such a disk image that is readable by target computers using a disk image driver.
>
> The Examiner cites to col. 5, lines 59-60 of Willman to support the assertion that Willman discloses "a controller for creating a [disk image] of the source device." At that location, Willman reads, "In the MS-DOS environment, floppy disks are referred to as volumes. Fixed disks (or hard disks) may be partitioned into multiple volumes" (col. 5, lines 57-60).

Also see the 2nd to last par. on pg. 9:

> Nothing in Whiting is related to the use of disk images, as claimed. Neither Willman nor Whiting, alone or in combination, teach, suggest or disclose a controller for creating a disk image or a disk image driver at a plurality of target computers that allow target computers to read files of different file formats on the disk image. Claim 1 is therefore patentable over the cited combination.

The examiner respectfully disagrees. First it is noted the Willman is not relied upon for the teaching of a “disk image”, and contrary to the applicants' assertion Whiting explicitly teaches the use of a “disk image”. It is this teaching which is relied upon in the rejection.

More specifically Willman discloses a system which acts upon and 'mounts' virtual representations of a physical storage device. For example, see col. 3, line 67-col. 4, line 1:

> Similarly, various partitions of hard disk 120 may also be formatted in accordance with a number of files [sic] systems as indicated by volumes 134, 136 and 138.

Further, Whiting teaches an alternate virtual representation of physical storage device was known in the prior art. For example see col. 3, lines 53-58:

> Compressed files are stored in a dedicated portion of disk drive 24 called a Compressed Image Data File (DCIF) 26. CDIF 26 is accessed using the drive letter assigned to data compression device driver 20.

As acknowledged by the applicants, a prior art system would have treated both of these virtual representations as if they were physical storage devices see e.g. last par. on pg. 8, “A disk image is a file ... which appears to computer system resources as though it were itself a physical storage device"; and 2nd par. on pg. 9 "A logical volume partition ... such that different portions of the physical drive appear to the user or other application programs as though they were separate physical volumes").

It should be apparent, at least on its face, that substituting one known virtual representation of a physical storage device for another known virtual representation of a physical storage device would require no significant changes in implementation details. Further, Whiting explicitly indicates that his "disk image" provides the added benefit of reducing the amount of physical storage required (see e.g. col. 3, lines 54-56 "Compressed Files"). Accordingly, those of ordinary skill in the art would have been motivated to make the substitution in order to take advantage of this smaller size.

Accordingly, the applicants' arguments are not persuasive, and the previous rejections are maintained.

Recapture

Claims 21-38 rejected under 35 U.S.C. 251 as being an improper recapture of broadened claimed subject matter surrendered in the application for the patent upon which the present reissue is based. See *Pannu v. Storz Instruments Inc.*, 258 F.3d 1366, 59 USPQ2d 1597 (Fed. Cir. 2001); *Hester Industries, Inc.* v. *Stein, Inc.*, 142 F.3d 1472, 46 USPQ2d 1641 (Fed. Cir. 1998); *In re Clement,* 131 F.3d 1464, 45 USPQ2d 1161 (Fed. Cir. 1997)*; Ball Corp.* v. *United States*, 729 F.2d 1429, 1436, 221 USPQ 289, 295 (Fed. Cir. 1984). A broadening aspect is present in the reissue which was not present in the application for patent. The record of the application for the patent shows that the broadening aspect (in the reissue) relates to claim subject matter that applicant previously surrendered during the prosecution of the application.

Accordingly, the narrow scope of the claims in the patent was not an error within the meaning of 35 U.S.C. 251, and the broader scope of claim subject matter surrendered in the application for the patent cannot be recaptured by the filing of the present reissue application.

- The error being relied upon as the basis for reissue is the inclusion of the "means for creating a disk image" limitation in claim 1 *(see the oath filed 4/8/02)*. However, it was at least in part, this feature that applicant relied upon for patentability *(see e.g. the 1st and 2nd full par. on pg. 4 of the response filed 7/98 in the original case)*. Thus on its face the basis for the request seems to constitute impermissible recapture. Further if a new oath is submitted indicating a different basis for reissue, claims 21-28 would still require such a limitation because this feature was previously argued as allowable subject matter.
- The response filed in the original case on 7/98 added the limitation that the disk image "is a virtual representation of said physical storage volume such that it includes volume format information". Claims 21-38 each indicate that the disk image "is a virtual representation of said physical storage volume". However, claims 21-24 do not explicitly recite the disk image includes "volume format information". Claim 25 recites the inclusion of "information indicative of the first and second file formats" but does not explicitly indicate that the formats are 'volume' formats. Claims 29 & 30 have been amended to indicate the image includes "volume information describing ... formats" and thus are no longer rejected for this reason.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 7, 14, 16, 20-25, 29-34, 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,363,487 to Willman et al. (Willman) in view of US 5,414,850 to Whiting (Whiting).

Regarding Claim 1: Willman discloses a system for accessing computer-readable files stored on a source device comprising:

a controller for creating a representation of the source device *(col. 5, lines 59-60 "Fixed disks (or hard disks) may be partitioned into multiple volumes")*, wherein said source device is a physical storage volume on which said computer-readable files to be accessed are located *(Fig. 1A, Hard disk 120)*, and for storing said disk image on a storage device that is accessible to remote computers *(col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")*, wherein said representation is a virtual representation of said physical storage volume such that it includes volume format information that reflects the format of said physical storage volume *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk 120 may also be formatted in accordance with a number of files systems as*

indicated by volumes 134, 136 and 138"), and which enables said representation to be mounted at each of said plurality of target computers *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")*; and

a driver having access to file format information which enables said target computers to read files, which exhibit different file formats, contained on said disk image *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 22, lines 24-27 "each local FSD in the FSD chain"; note that here the container object (i.e. 'the FSD chain') constitutes a single driver with access to the information (i.e. 'each local FSD') allowing it to access multiple formats*).

Willman does not explicitly disclose the drivers *(col. 4, lines 44-47 "file system drivers 254, 256, 258")* residing at each of a plurality of target computers *(distinct from the source computer)*, but does disclose mounting remote volumes *(col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the disclosed remote server *(col. 4, lines 4-7 "networks having servers")* as a system similar to that explicitly described by Willman *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk … formatted in accordance with a number of*

files systems"). In such an environment the remote server would constitute the claimed source computer with image file *(col. 3, lines 67-col. 4, line 1 "partitions … with a number of files systems")* and the system performing the mounting would constitute the target computer with resident disk image drivers *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258)*. Further it would have been obvious to connect multiple computers to the disclosed remote server. Those of ordinary skill in the art would have been motivated to do so as a known and obvious means of implementing the disclosed system which would have produced only the expected results *(col. 4, lines 4-7 "servers which may operate in accordance with there own file systems"; col. 3, lines 36-46 "FIG. 1 shows a computer system 100 … adapted for communicating with a network 126")*. In other words it would have been obvious to implement any number of computers according to the teachings of Willman and connect them to any other number of computers also implemented accordingly to Willman's teachings.

Further Willman does not disclose the representation of a storage volume is a disk image.

Whiting teaches representing a storage volume with a disk image *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive")*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to represent Willman's remote storage devices *(col. 22, lines 9-11 "remote (virtual disk) device")* using Whiting's disk images *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive")*. Those of ordinary skill in the art would have been motivated to do so in order to reduce the physical storage space required at the remote node *(Whiting col. 1, line 65-col. 2, line 5 "To implement data compression … creating a … a Compressed Disk Image File (CDIF), on the drive")*.

Regarding Claim 7: The rejection of claim 1 is incorporated; further Willman discloses said driver includes data pertaining to different types of file systems, to thereby enable said driver to access representations stored in different file formats respectively related to said different types of file systems *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 22, lines 24-27 "each local FSD in the FSD chain")*.

Regarding Claim 14: The rejection of claim 1 is incorporated; further Willman discloses said representation is stored on the storage device in a read/write format comprising a file which contains a copy of every logical address block in said physical storage volume, regardless of whether the blocks contain data *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk 120 may also be formatted in accordance with a number of files systems as indicated by volumes 134, 136 and 138")*.

Regarding Claim 16: Willman discloses a method for providing access to files stored on a source device, comprising the steps of:

creating a representation of said source device, wherein said source device is a physical storage volume which contains said files to be accessed by said remote computer *(col. 5, lines 59-60 "Fixed disks (or hard disks) may be partitioned into multiple volumes")*, and wherein said representation is a virtual representation of said physical storage volume in that said representation includes volume format information that reflects the format of said physical storage volume *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk 120 may also be formatted in accordance with a number of files systems as indicated by volumes 134, 136 and 138")*;

generating a script file which includes an identification of said disk image *(col. 22, lines 19-23 "The connection ... is also achieved through the DosFsAttach interface")*;

launching said script file at said remote computer *(col. 22, lines 24-27 "When a local volume is first referenced, … asks each local FSD in the FSD chain to accept the media")*; and

mounting, *(col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")*, the representation identified in said script file using a driver that has access to volume format information which is needed to mount files, exhibiting different file formats *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 22, lines 24-27 "each local FSD in the FSD chain")*.

Willman does not explicitly disclose mounting the representation at a target computer *(distinct from the source computer)*, but does disclose mounting remote volumes *(col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the disclosed remote servers *(col. 4, lines 4-7 "networks having servers")* as a system similar to that explicitly described by Willman *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk … formatted in accordance with a number of files systems")*. In such an environment the remote servers would constitute the claimed source computer with the storage volume representation *(col. 3, lines 67-col. 4, line 1 "partitions … with a number of files systems")* and the system performing the mounting would constitute the target computer *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258)*. Those of ordinary skill in the art would have been motivated to do so as a known and obvious means of implementing the disclosed system which would have produced only the expected results *(col. 4, lines 4-7 "servers which may operate in accordance with there own file systems"; col. 3, lines 36-46 "FIG. 1 shows a computer system 100 … adapted for communicating with a network 126")*.

Further Willman does not disclose the representation of a storage volume is a disk image.

Whiting teaches representing a storage volume with a disk image *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive").*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to represent Willman's remote storage devices *(col. 22, lines 9-11 "remote (virtual disk) device")* using Whiting's disk images *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive").* Those of ordinary skill in the art would have been motivated to do so in order to reduce the physical storage space required at the remote node *(Whiting col. 1, line 65-col. 2, line 5 "To implement data compression … creating a … a Compressed Disk Image File (CDIF), on the drive").*

Regarding Claim 20: The rejection of claim 16 is incorporated; further Willman discloses selectively storing said disk image in a storage medium device in a read/write format comprising a file which contains a copy of every logical address block in said physic al storage volume, regardless of whether the blocks contain data *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk 120 may also be formatted in accordance with a number of files systems as indicated by volumes 134, 136 and 138").*

Regarding Claim 21: Willman discloses a system for accessing computer-readable files having a source computer and a target computer, the source computer comprising:

a physical storage volume *(Fig. 1A, Hard disk 120)*; and

a memory for storing a representation of the storage volume *(Fig. 1A, RAM 104; also see e.g. col. 7, lines 13-16 "the FAT … retained in random access memory")*, the representation being a mountable virtual representation of the physical storage volume (*col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")* and including a representation of a plurality of computer-readable files stored on the storage volume *(col. 5, lines 59-60 "Fixed disks (or hard disks) may be partitioned into multiple volumes")*, at least two of the plurality of computer-readable files having different file formats *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk 120 may also be formatted in accordance with a number of files systems as indicated by volumes 134, 136 and 138")*, each of which is capable of being read by a disk image driver *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 22, lines 24-27 "each local FSD in the FSD chain"; note that here the container object (i.e. 'the FSD chain') constitutes a single driver with access to the information (i.e. 'each local FSD') allowing it to access multiple formats)*.

Willman does not explicitly disclose the driver *(col. 4, lines 44-47 "file system drivers 254, 256, 258")* residing at a target computer *(distinct from the source computer)*, but does disclose mounting remote volumes *(col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the disclosed remote servers *(col. 4, lines 4-7 "networks having servers")* as a system similar to that explicitly described by Willman *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk … formatted in accordance with a number of files systems")*. In such an environment the remote servers would constitute the claimed source computer with image file *(col. 3, lines 67-col. 4, line 1 "partitions … with a number of files systems")* and the system performing the mounting would constitute the target computer with resident disk image drivers *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258)*. Those of ordinary skill in the art would have been motivated to do so as a known and obvious means of implementing the disclosed system which would have produced only the expected results *(col. 4, lines 4-7 "servers which may operate in accordance with there own file systems"; col. 3, lines 36-46 "FIG. 1 shows a computer system 100 … adapted for communicating with a network 126")*.

Further Willman does not disclose the representation of a storage volume is a disk image.

Whiting teaches representing a storage volume with a disk image *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive")*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to represent Willman's remote storage devices *(col. 22, lines 9-11 "remote*

(virtual disk) device") using Whiting's disk images *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive")*. Those of ordinary skill in the art would have been motivated to do so in order to reduce the physical storage space required at the remote node *(Whiting col. 1, line 65-col. 2, line 5 "To implement data compression … creating a … a Compressed Disk Image File (CDIF), on the drive")*.

Regarding Claim 22: Willman discloses a system for accessing computer-readable files having a source computer and a target computer, the target computer comprising:

a processor *(Fig. 1A Microprocessor 102)*; and

a memory, coupled to the processor *(Fig. 1A RAM 104)*, for storing a driver *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258")* that, when executed by the processor, enables a storage volume representation resident at the computer *(col. 5, lines 59-60 "Fixed disks (or hard disks) may be partitioned into multiple volumes")* to be mounted at the target computer *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258")*, the representation being a mountable virtual representation of the physical storage volume (*col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")* and including a plurality of computer-readable files stored on a storage volume, at least two of the plurality of computer-readable files having different file formats *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk 120 … formatted in accordance with a number of files systems as indicated by volumes 134,*

136 and 138"), each of which is capable of being read by the driver *(col. 4, lines 59-68 "Once an FSD is installed and initialized, the kernel communicates with it in terms of logical request for file opens, reads, writes, seeks, closes, and so on"; col. 22, lines 24-27 "each local FSD in the FSD chain"; again note that here the container object (i.e. 'the FSD chain') constitutes a single driver with access to the information (i.e. 'each local FSD') allowing it to access multiple formats).*

Willman does not explicitly disclose the representation of the storage volume *(col. 5, lines 59-60 "Fixed disks … partitioned into multiple volumes")* residing at a source computer *(distinct from the target computer)*, but does disclose mounting remote volumes *(col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems").*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the disclosed remote servers *(col. 4, lines 4-7 "networks having servers")* as a system similar to that explicitly described by Willman *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk … formatted in accordance with a number of files systems")*. In such an environment the remote servers would constitute the claimed source computer with image file *(col. 3, lines 67-col. 4, line 1 "partitions … with a number of files systems")* and the system performing the mounting would constitute the target computer with resident drivers *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258).* Those of ordinary skill in the art would have been

motivated to do so as a known and obvious means of implementing the disclosed system which would have produced only the expected results *(col. 4, lines 4-7 "servers which may operate in accordance with there own file systems"; col. 3, lines 36-46 "FIG. 1 shows a computer system 100 … adapted for communicating with a network 126").*

Further Willman does not disclose the representation of a storage volume is a disk image.

Whiting teaches representing a storage volume with a disk image *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive").*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to represent Willman's remote storage devices *(col. 22, lines 9-11 "remote (virtual disk) device")* using Whiting's disk images *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive").* Those of ordinary skill in the art would have been motivated to do so in order to reduce the physical storage space required at the remote node *(Whiting col. 1, line 65-col. 2, line 5 "To implement data compression … creating a … a Compressed Disk Image File (CDIF), on the drive").*

Regarding Claim 23: The rejection of claim 22 is incorporated; further Willman discloses the disk image is mounted at the target computer as a local volume having a file system format that is different than the file system format of the storage volume *(col.*

3, lines 67-col. 4, line 1 "various partitions of hard disk 120 … formatted in accordance with a number of files systems as indicated by volumes 134, 136 and 138"; col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258).

Regarding Claim 24: The rejection of claim 22 is incorporated; further Willman discloses the disk image is mounted at the target computer as a remote volume, which can be accessed by the target computer through a communication network *(col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems").*

Regarding Claim 25: Willman discloses a system for accessing computer-readable files, comprising:

a source computer coupled to a first storage device *(Fig. 1A, Hard disk 120)* having a first file format and a second storage device having a second file format, the source computer further coupled to a memory for storing a multiple-format representation of the storage devices *(col. 5, lines 59-60 "Fixed disks (or hard disks) may be partitioned into multiple volumes")*, the multiple-format representation being a mountable virtual representation of the physical storage volume (*col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")* and including information indicative of the first and second file formats *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk 120 may also be*

formatted in accordance with a number of files systems as indicated by volumes 134, 136 and 138"); and

a computer coupled to a memory for storing a driver, the disk image driver capable of reading the first and second file formats when executed by a processor located at the target computer (*col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 22, lines 24-27 "each local FSD in the FSD chain"*).

Willman does not explicitly disclose the driver *(col. 4, lines 44-47 "file system drivers 254, 256, 258")* residing at a target computer *(distinct from the source computer)*, but does disclose mounting remote volumes *(col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the disclosed remote servers *(col. 4, lines 4-7 "networks having servers")* as a system similar to that explicitly described by Willman *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk … formatted in accordance with a number of files systems")*. In such an environment the remote servers would constitute the claimed source computer with image file *(col. 3, lines 67-col. 4, line 1 "partitions … with a number of files systems")* and the system performing the mounting would constitute the target computer with resident disk image drivers *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258)*. Those of ordinary skill in the art would have

been motivated to do so as a known and obvious means of implementing the disclosed system which would have produced only the expected results *(col. 4, lines 4-7 "servers which may operate in accordance with there own file systems"; col. 3, lines 36-46 "FIG. 1 shows a computer system 100 … adapted for communicating with a network 126").*

Further Willman does not disclose the representation of a storage volume is a disk image.

Whiting teaches representing a storage volume with a disk image *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive").*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to represent Willman's remote storage devices *(col. 22, lines 9-11 "remote (virtual disk) device")* using Whiting's disk images *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive").* Those of ordinary skill in the art would have been motivated to do so in order to reduce the physical storage space required at the remote node *(Whiting col. 1, line 65-col. 2, line 5 "To implement data compression … creating a … a Compressed Disk Image File (CDIF), on the drive").*

Regarding Claims 29 and 30: Willman discloses a method of accessing computer-readable files, comprising:

mounting a multiple-format representation of a physical storage volume created by a source computer *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 4, lines 59-68 "Once an FSD is installed and initialized, the kernel communicates with it in terms of logical request for file opens, reads, writes, seeks, closes, and so on")*, the multiple-format representation being a mountable virtual representation of the physical storage volume (*col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")* and including volume information describing a plurality of file system formats employed by one or more storage volumes *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk 120 may also be formatted in accordance with a number of files systems as indicated by volumes 134, 136 and 138")*; and,

reading the volume information from representation *(col. 4, lines 59-68 "Once an FSD is installed and initialized, the kernel communicates with it in terms of logical request for file opens, reads, writes, seeks, closes, and so on").*

Willman does not explicitly disclose reading the volume information *(col. 5, lines 59-60 "Fixed disks … partitioned into multiple volumes")* at a target computer *(distinct from the source computer)*, but does disclose mounting remote volumes *(col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems").*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the disclosed remote servers *(col. 4, lines 4-7 "networks having servers")* as a system similar to that explicitly described by Willman *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk … formatted in accordance with a number of files systems")*. In such an environment the remote servers would constitute the claimed source computer with image file *(col. 3, lines 67-col. 4, line 1 "partitions … with a number of files systems")* and the system performing the mounting would constitute the target computer with resident disk image drivers *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258)*. Those of ordinary skill in the art would have been motivated to do so as a known and obvious means of implementing the disclosed system which would have produced only the expected results *(col. 4, lines 4-7 "servers which may operate in accordance with there own file systems"; col. 3, lines 36-46 "FIG. 1 shows a computer system 100 … adapted for communicating with a network 126")*.

Further Willman does not disclose the representation of a storage volume is a disk image.

Whiting teaches representing a storage volume with a disk image *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive")*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to represent Willman's remote storage devices *(col. 22, lines 9-11 "remote*

(virtual disk) device") using Whiting's disk images *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive")*. Those of ordinary skill in the art would have been motivated to do so in order to reduce the physical storage space required at the remote node *(Whiting col. 1, line 65-col. 2, line 5 "To implement data compression … creating a … a Compressed Disk Image File (CDIF), on the drive")*.

Regarding Claim 31: Willman discloses a system for accessing computer-readable files having a source computer and a target computer, the target computer comprising:

a processor *(Fig. 1A Microprocessor 102)*; and

a driver that, when executed by the processor, enables a representation of a storage volume resident at the source computer to be mounted at the computer *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258)*, the representation being a mountable virtual representation of the physical storage volume (*col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")* and including a plurality of computer-readable files stored on a storage volume coupled to the source computer *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk 120 may also be formatted in accordance with a number of files systems as indicated by volumes 134, 136 and 138")*, the driver having access to the files stored on the representation in different file formats *(col. 4, lines 59-68 "Once an FSD is installed and initialized, the kernel communicates with it in terms of logical request for file opens, reads, writes, seeks, closes, and so on")*.

Willman does not explicitly disclose the drivers *(col. 4, lines 44-47 "file system drivers 254, 256, 258")* residing at a target computer *(distinct from the source computer)*, but does disclose mounting remote volumes *(col. 4, lines 4-7 "may be coupled to any number of networks having servers which may operate in accordance with there own file systems")*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the disclosed remote servers *(col. 4, lines 4-7 "networks having servers")* as a system similar to that explicitly described by Willman *(col. 3, lines 67-col. 4, line 1 "various partitions of hard disk … formatted in accordance with a number of files systems")*. In such an environment the remote servers would constitute the claimed source computer with image file *(col. 3, lines 67-col. 4, line 1 "partitions … with a number of files systems")* and the system performing the mounting would constitute the target computer with resident disk image drivers *(col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258)*. Those of ordinary skill in the art would have been motivated to do so as a known and obvious means of implementing the disclosed system *(col. 4, lines 4-7 "servers which may operate in accordance with there own file systems"; col. 3, lines 36-46 "FIG. 1 shows a computer system 100 … adapted for communicating with a network 126")*.

Further Willman does not disclose the representation of a storage volume is a disk image.

Whiting teaches representing a storage volume with a disk image *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive").*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to represent Willman's remote storage devices *(col. 22, lines 9-11 "remote (virtual disk) device")* using Whiting's disk images *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive").* Those of ordinary skill in the art would have been motivated to do so in order to reduce the physical storage space required at the remote node *(Whiting col. 1, line 65-col. 2, line 5 "To implement data compression … creating a … a Compressed Disk Image File (CDIF), on the drive").*

Regarding Claim 32: The rejection of claim 31 is incorporated; further Willman discloses the driver is adapted to provide to the target computer files in a file format utilized by the target computer *(col. 4, lines 59-68 "Once an FSD is installed and initialized, the kernel communicates with it in terms of logical request for file opens, reads, writes, seeks, closes, and so on").*

Regarding Claim 33: The rejection of claim 31 is incorporated; further Willman discloses wherein the disk image driver is adapted to access files stored on the disk

image in different file formats (*col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258"; col. 22, lines 24-27 "each local FSD in the FSD chain"*).

Regarding Claim 34: The rejection of claim 31 is incorporated; further Willman discloses the storage volume is formatted according to a disk operating system (DOS) *(col. 6, lines 4-6 "the FAT file system")*, and a disk drive at the target computer is formatted according to a Hierarchical File System (HFS) *(col. 8, lines 37-42 "The Fnode's allocation becomes the root for a B+ tree"; note that Willman's disks can each be represented by any known file system).*

Regarding Claim 35: The rejection of claim 31 is incorporated; further Willman discloses the storage volume is formatted according to HFS *(col. 8, lines 37-42 "The Fnode's allocation becomes the root for a B+ tree")*, and a disk drive at the target computer is formatted according to DOS *(col. 6, lines 4-6 "the FAT file system").*

Regarding Claim 36: The rejection of claim 31 is incorporated; further Willman discloses the driver maintains a list of file formats that the disk image driver is capable of recognizing *(col. 22, lines 24-27 "the FSD chain").*

Regarding Claim 37: The rejection of claim 31 is incorporated; further Willman discloses the disk image is mounted at the target computer as a local volume having a file system format that is different than the file system format of the storage volume *(col.*

3, lines 67-col. 4, line 1 "various partitions of hard disk 120 … formatted in accordance with a number of files systems as indicated by volumes 134, 136 and 138"; col. 4, lines 44-47 "dynamically attaching file system drivers 254, 256, 258).

Regarding Claim 38: The rejection of claim 31 is incorporated; further Willman discloses the disk image is mounted at the target computer as a remote volume, which can be accessed by the target computer through a communication network *(col. 22, lines 9-11 "an FSD which uses a block device driver to do I/O to a … remote (virtual disk) device").*

Claims 15 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,363,487 to Willman et al. (Willman) in view of US 5,414,850 to Whiting (Whiting) in view of US 5,604,906 to Murphy et al. (Murphy).

Regarding Claim 15: The rejection of claim 1 is incorporated; further Willman and Whiting do not explicitly teach the disk image in an uncompressed read/only format containing only used of physical storage

Murphy teaches a disk image is stored on the storage device in an uncompressed read/only format comprising a file which contains volume information and a copy of only those logical address blocks of the physical storage volume which contain data *(col. 7,*

lines 51-54 "This source image starts at the first block ... and continues up to and including the last used block"; note that no unused blocks are included).

It would have been obvious to one of ordinary skill in the art at the time the invention was made exclude unused data blocks from the drive image *(col. 1, line 65-col. 2, line 5 "a Compressed Disk Image File (CDIF), on the drive")* as taught by Murphy *(col. 7, lines 51-54 "This source image starts at the first block ... and continues up to and including the last used block").* Those of ordinary skill in the art would have been motivated to do so to further reduce the storage necessary to store the disk image.

Regarding Claim 17: The rejection of claim 16 is incorporated; further Willman and Whiting do not teach the script file includes an identification of an executable program to be run after the image is mounted.

Murphy teaches a script file which includes an identification of an executable program, and further including the step of running said program at the remote computer after mounting said disk image *(col. 5, lines 13-16 "new bundles can be downloaded … and this updating can take place automatically").*

It would have been obvious to one of ordinary skill in the art at the time the invention was made include a script file as disclosed in Murphy *(col. 5, lines 13-16 "new bundles can be downloaded … and this updating can take place automatically")* in Willman's

system. Those of ordinary skill in the art would have been motivated to do so to automate a software update *(Murphy col. 5, lines 13-16 "updating can take place automatically")*.

Regarding Claim 18: The rejection of claim 17 is incorporated; further Murphy teaches said program is an installer program which installs files from the mounted disk image onto the remote computer *(col. 3, lines 25-28 "utility ... to install software onto multiple storage devices)*.

Regarding Claim 19: The rejection of claim 16 is incorporated; further Willman and Whiting do not teach disk images are created and identified in said script file.

Murphy teaches a plurality of disk images *(col. 9, lines 21-23 "An alternative embodiment … which includes multiple image devices")* are created and identified in said script file *(Fig. 8, Create Image Drive 86)*, and wherein all of the disk images identified in said script file are mounted at said remote computer *(Fig. 8, Block Transfer From Image To Target 92)*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to create and mount image drives with a script as taught by Murphy *(Fig. 8)* in the system described by Willman *(Fig. 1A)*. Those of ordinary skill in the art would

have been motivated to do so in order to automate the process of creating and mounting multiple drives.

Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,363,487 to Willman et al. (Willman) in view of US 5,414,850 to Whiting (Whiting) in view of Official Notice.

Regarding Claim 26: The rejection of claim 25 is incorporated; further Willman discloses the first format is an uncompressed read/write format *(col. 4, lines 61-64 "logical requests for … reads, writes"; note that Willman makes no mention of compressing the representations thus it is implicit that they are uncompressed).*

Willman and Whiting do not explicitly teach a read/only format.

Official notice is taken that the read/only format was well known in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to represent Willman's storage volumes as read/only. Those of ordinary skill in the art would have been motivated to do so to protect the data from change.

Regarding Claim 27: The rejection of claim 25 is incorporated; further Willman discloses the first format is an uncompressed read/write format *(col. 4, lines 61-64*

"logical requests for … reads, writes"; note that Willman makes no mention of compressing the representations thus it is implicit that they are uncompressed).

Whiting teaches a compressed format *(col. 2, lines 1-2 "a Compressed Disk Image File").*

Willman and Whiting do not explicitly teach a read/only format.

Official notice is taken that the read/only format was well known in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to represent Willman's storage volumes as read/only. Those of ordinary skill in the art would have been motivated to do so to protect the data from change.

Regarding Claim 28: The rejection of claim 25 is incorporated; further Willman discloses the first format is uncompressed *(note that Willman makes no mention of compressing the representations thus it is implicit that they are uncompressed).*

Whiting teaches a compressed format *(col. 2, lines 1-2 "a Compressed Disk Image File").*

Willman and Whiting do not explicitly teach a read/only format.

Official notice is taken that the read/only format was well known in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to represent Willman's storage volumes as read/only. Those of ordinary skill in the art would have been motivated to do so to protect the data from change.

Allowable Subject Matter

Claims 2-6, and 8-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason D. Mitchell whose telephone number is (571)272-3728. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bullock Lewis can be reached on (571) 272-3759. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason D. Mitchell/
Primary Examiner, Art Unit 2193